

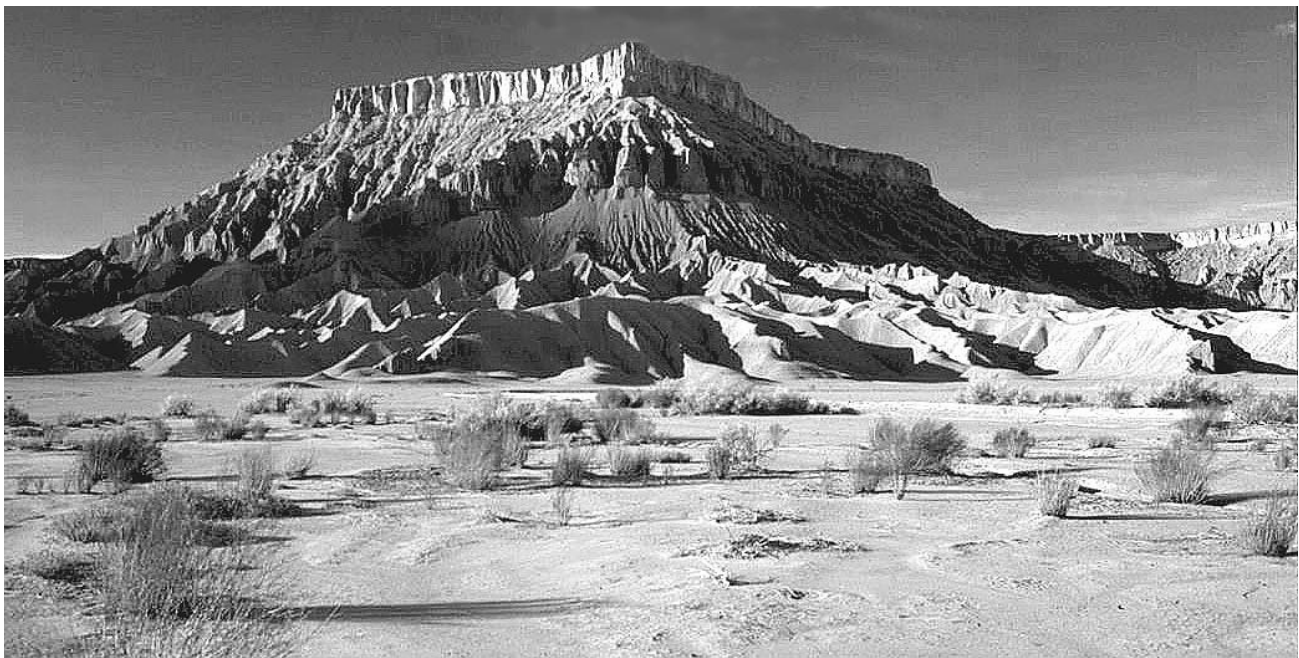


Sego Lily

Newsletter of the Utah Native Plant Society

November 2006 Volume 29 No. 6

The Badlands at Factory Butte (page 5)



Top: Factory Butte in 1978, photo by Dave Wallace. Above: Wright's fish hook cactus (*Sclerocactus wrightiae*), photo by Dorde Woodruff

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Sego Lily Editor: Walter Fertig (walt@kanab.net).
Articles, photos, and illustrations from members are welcome and encouraged. The deadline for the January 2007 Sego Lily is 15 December 2006.

Website: For late-breaking news, the UNPS store, the Sego Lily archives, Chapter events, links to other websites (including sources of native plants and the digital Utah Rare Plant Field Guide), and more, go to unps.org. **Many thanks to Xmission for sponsoring our website.**

For more information on UNPS:
Contact Bill King (582-0432) or Susan Garvin (356-5108), or write to UNPS, PO Box 520041, Salt Lake City, UT, 84152-0041 or email unps@unps.org

Chapter News & Events

Escalante (Garfield County): In September 2006 the Escalante Chapter hosted a talk by Dustin Rooks, range specialist for Grand Staircase-Escalante NM, on the topic of "The Birds and Bees of Penstemon Evolution". The talk was well received and much appreciated by the chapter.

In early October the chapter set up a table at the Escalante Canyons Arts Festival-Everett Ruess Days to provide native plant references and seek new

members. This event also helped with chapter fundraising as members donated time, baked goods and canned goods for sale. By all accounts the event was a great success.

The October 2006 meeting featured a talk entitled "Planting Design 101" by Allysia Angus, landscape architect for Grand Staircase-Escalante NM and chapter chair. The presentation concluded with hands-on exercises where members produced a small scaled planting plan of their own to take home. – *Allysia Angus*

Manzanita (Kane County): The Chapter's fall plant sale on 23 September generated a large turnout for the Kanab Farmer's market. Special thanks to Janett Warner of Wildland Nursery and Merrill Johnson of Great Basin Natives for bringing a selection of trees, shrubs, and wildflowers for sale and for donating a percentage of their proceeds to the Kanab chapter. – *Walter Fertig*

Mountain (Summit County): The location of Park City heritage garden has changed from its original site in Park City to the Summit County Library at Kimball's Junction, located just off Kilby Road. Take the Park City exit at Kimball's Junction, turn right on Kilby Road, and then take the first left (across from McDonald's). The library is the first building on the left. Areas have been planted at the northeast and southeast entrances.

Overzealous "weed" pulling by Park City Municipal Garden crews and water control problems at the former location led to the move. The garden has not yet been relabeled until it has a chance to improve and recover. If you would like to help, contact Dave Gardner (davegardner70@msn.com). – *Tony Frates*

Salt Lake: During the Utah State Fair, Dr. Paul Zuckerman held a wildflower photography exhibit in the horticulture building at the UT State Fair Park. The exhibit was well-received by hundreds of people and featured native wildflowers of the Wasatch Front—*Kipp Lee*

Southern (Washington County): Thanks to UNPS member Barbara Farnsworth, Springdale's new Community Center is a shining example of using natives for landscaping. At last springs Earth Day celebration, Springdale had the proposed landscape plans for the Community Center available for public review. Barbara look. She discovered that the contractor's landscaper (in Salt Lake City) had planned to fill the "landscape" with Pampas Grass, Red-hot Pokers, and non-native trees that were definitely not her favorites. So, being a Springdale resident, she suggested that native plants would be much more appropriate in Springdale than water-intensive non-native plants. She spoke so eloquently that they appointed her to plan and eventually to accomplish the landscaping.

So she got busy with her books and checked into what was available and appropriate for the area and came up with HER plan, which was readily accepted. After the contractor had things ready (including a watering system), a number of Velvet ash trees were planted, along with native shrubs. In front of the building, where a flagpole had been planned (but was not needed, as there was already another one on the property) went a lovely Redbud. Barbara even planted a few other things on her own.

Then she called on her fellow "Vipers" (Volunteers in Parks - a group of native plant enthusiasts who help with the revegetation work in Zion NP - most of whom are members of the Manzanita and Southern Chapters) to help plant about 750 native grasses, wildflowers, and shrubs in front of and beside the building. These plants were all propagated in Zion's greenhouse.

The Springdale Community Center houses a new library, as well as meeting rooms, and promises to be a very busy place. This winter Barbara will be labeling individual species in the landscape. Good "advertising" for natives! - *Margaret Malm*

Utah Valley: The Utah Valley Chapter has two ongoing weekly activities while the weather permits. Weeding and working on the Wasatch Heritage garden (1040 N 900 E in Provo) takes place every Tuesday afternoon around 3:30 PM. Our "Plants and Preschoolers" hikes are still going on each Thursday at 10 AM. Contact Celeste Kennard (801 377-5918 or celeste@byu.edu) for more details if a hike at a leisurely pace and lots of exploring sounds fun to you.

We will hold a propagation workshop at Rock Canyon Trailhead Park in Provo on October 28, 10 AM until noon. Please bring your seed collections of Utah native plants. Seeds for some plants are also available from UNPS. We will clean seeds and plant them so members can grow them outside at home through the winter. The plants can be donated back to the chapter for the plant sale in May or planted at member's homes. The chapter will donate book planters and potting medium to those who donate seeds and plants back to the chapter. Those who keep all their plants need to pay \$5.00/tray (72 cell rootrainer) for supplies on the day of the workshop.

The workshop will be by reservation only. Please contact Robert Fitts (fitts_r_d@yahoo.com or 801-796-8631) or Susan Garvin (sgarvin@xmission.com or 801-756-6177) for more information. If you can come to Pleasant Grove to help us prepare for the workshop on any evening that week, please call ASAP. - *Celeste Kennard & Susan Garvin*

Attention UNPS Members: We are updating our database so members will get timely delivery of the Seago Lily and other notices of UNPS events. Has your phone, street address, or e-mail address changed in the last year or so? If it has, please drop us a note (PO Box 520041, Salt Lake City, UT 84052) or e-mail (cyberflora@xmission.com). - *Bill Gray*



Astragalus equisolensis
by Kaye Thorne

USFWS Revises Candidate Plant List

On 12 September, 2006, the US Fish and Wildlife Service (USFWS) published a revised list of animal and plant species being considered as candidates for potential listing under the Endangered Species Act. Since the list was last updated in 2004, the USFWS has added 7 new species as candidates, removed 10, and elevated the status of 24 others (either as proposed or officially listed as Threatened or Endangered). Currently 279 plant, vertebrate, insect, mollusk, crustacean, and other invertebrate species from the US and abroad have candidate status (of which 140 are vascular plants). USFWS considers species to be candidates if sufficient information is available for proposing them as Threatened or Endangered, but such an action has not yet been taken in light of higher priorities for listing. Candidate species do not receive formal legal protection under the Endangered Species Act, but are frequently afforded extra attention by state and federal land management agencies.

Three Utah plant species have been dropped from the Candidate list, largely because they do not meet some or all of the USFWS's 5 criteria for listing (threatened destruction or modification of habitat/range, overutilization, disease/predation, inadequacy of protection, or other). These include the Horseshoe milkvetch (*Astragalus equisolensis*) endemic to the Duchesne River Formation in Uintah County Utah and adjacent Colorado, Aquarius paintbrush (*Castilleja aquariensis*) from Boulder Mountain and vicinity in SC Utah, and Rabbit Valley gilia (*Gilia* or *Aliciella caespitosa*), known only from Navajo Sandstone cliffs in the vicinity of Capitol Reef. Graham's beardtongue (*Penstemon grahamii*) of the Uintah Basin remains on the list, though it was recently proposed for listing as Threatened. White River beardtongue (*P. scariosus* var. *albifluvis*) also remains as a Candidate, but its status is unchanged. - *Walter Fertig*

Noteworthy Discoveries

New to Utah: *Cypripedium montanum* in Summit County

by Mindy Wheeler



Above: *Cypripedium montanum* by M. Wheeler.

Is it simple chance that a rare orchid shows up in the yard of a Utah Native Plant Society member? In the midst of doing the regular yard work in early June – trying to make the yard look somewhat wild and native, yet placating the neighbors with some form of order- I found this little gem hiding underneath a spruce tree. Very interesting, particularly since the suburban street is a mere 15 feet away and the neighbor's well manicured lawn about 10 feet away! Native populations of this orchid are considered critically imperiled in the state of Wyoming and rare in many other western states. A truly native population has not yet been recorded in Utah.

The running theory regarding the presence of this plant is that it was embedded in the root ball of the spruce tree when it was brought in for landscaping about 10 years ago. This plant can have long dormancy and requires a mycorrhizal fungal associate. Why this year? It is possible that it may have flowered in previous years, but it is not often that I get that deep into yardwork! It may also be possible that my relatively new drip irrigation system provided just the right conditions for this plant to feel that this was the year. Apparently, many nurseries or plant distributors sell laboratory propagated specimens of this plant.

Whatever the reason, it has been a complete surprise and joy to regularly visit this plant in the front yard!

A New Umbel in Bernie's Garden

by Bill Gray

The Salt Lake Chapter was planning a picnic in City Creek Canyon, so a few of us decided to check out one of the rare plants known from the canyon, *Angelica wheeleri*. This is a close relative of the common *Angelica pinnata*, but about twice the size and very localized and rare. After obtaining GPS coordinates from Ben Franklin's database at the Utah Heritage Program, we took off looking for the population known from near the top of the canyon. We didn't locate it first time around, but one of the group said he had noticed a tall parsley-type plant much farther down, so we decided to look for that on our way back. We found it, exactly where the database said one of the populations of *Angelica wheeleri* should be.

Trouble was, we started having doubts about it as we looked at photographs and compared them with pictures of authentic Wheeler's *Angelica*. The more we looked the less they resembled each other. It was more like celery than *Angelica*. Then Robert Fitts suggested Lovage (*Ligusticum officinale*), a European pot herb – that fitted in every way that we could check. Next day I went back up the canyon to look more closely, and to see if I could find more. There was only the one small patch about (6 feet wide by six feet long, but ten feet tall), sandwiched between the road and the stream. Genuine *Angelica wheeleri* was later found at the higher location, so there was no doubt about their being different. To our knowledge, this is the first documented occurrence of the plant naturalized in Utah.

So how did lovage get there? Presumably somebody planted it; but City Creek Canyon was owned by Brigham Young from the earliest days, and not opened to settlers. Young deeded it to the City shortly before his death. This particular little stretch of canyon is called "Bernie's Hollow", so we are trying to locate information on him and other possible sources. Over the years I have encountered many other stray plants that might be from early settlers' gardens where there is nothing else to suggest that anybody lived there. In City Creek alone there are lovage, privet, lilac, apple trees and a non-native hawthorn tucked away in odd places. While walking the foothills and canyons it is always worthwhile to note these little signs of earlier times, and to try and imagine life a hundred years ago.

Have you made a notable botanical discovery in Utah? This could be a new species for the state, a county distribution record, or a significant range extension. Attain fleeting botanical fame by submitting your noteworthy discovery to the Segó Lily (walt@kanab.net).

The Badlands at Factory Butte

By Dorde Woodruff

Recently Utahn Cindi Everitt was having dinner at a restaurant in the Rhineland. An Icelandic woman came over to her.

“I don’t usually do this,” she said, “but I heard you say you’re from Utah, and I’ve really wanted to know—is Factory Butte real?”

When assured that it was, she said it was so other-worldly, she really thought it had to be something made in Hollywood.

Cindi also tells of a striking, huge mural of Factory Butte; no attribution, just the mural, placed high up on a wall of the Amsterdam airport.

To those from elsewhere, our exotic Utah scenery is even more strange and unusual than it is to us. On googling Factory Butte images, over 300 come up from all over the world, some from travelers but a surprising number from art-oriented professionals.

In the last decade or two a noisome conflict has developed between the OHV riders that enjoy the Factory Butte area and those who enjoy a subtler appreciation of it. As we know, many more people are recreating in the desert than ever before. But with marketing of successful small four-wheeled off-highway vehicles, (ATVs), has come an explosion of riders.

Anyone who’s tried riding a dirt bike cross-country knows it takes a certain amount of strength and courage. It’s not easy. Four wheelers are do-able for a much greater spectrum of folks. Riders claim that the Mancos Shale in the Factory Butte area, also known as the Caineville Badlands, is especially fun to ride.

In their 1982 Henry Mountains Planning Area Management Framework Plan (MFP), a precursor to the upcoming and long-delayed draft of the Richfield District Resource Management Plan (RMP), the BLM designated all 640 acres of Section 14, T28S, R9E, east of Factory Butte, as a riding area (see www.ut.blm.gov/planning/HENRYMFP.PDF for the whole 615–page document, or www.factorybutte.org/documents.html for selected excerpts). But while asking riders to be conservative, they closed or restricted only a few special areas, such as the Bull Creek Archeological District, South and North Caineville Mesa, and No Man’s Mesa. The riders expanded everywhere.

Now the badlands scenery viewed by thousands of people traveling highway 24 each year is marred by tracks most of the way between Hanksville and Capitol Reef. Take a ride nine miles up the Factory Butte Mine Road to a wide, barren, and austere Tununk Shale basin south of the San Rafael Reef, and tracks descend off the steep hillside and cross the basin, right past the sign that says “Designated Route; motorcycle use restricted to designated routes ONLY; cross country travel prohibited.”



Knife-edge ridges SW of North Caineville Mesa near Factory Butte. John Dohrenwend photo.

When I was the most active in motorcycling (in the 1970s and 80s, starting with the gas crisis when a vehicle getting 60 miles per gallon had much allure) you couldn’t get riders to be political. But now the leaders of Utah’s politically active OHV organization the Utah Shared Access Alliance (USA-ALL) have by their own testimony gone to the Sierra Club school of political activism, sending out press releases, urging their members to write officials, and originating lawsuits.

Why is this place so special to tourists, photographers, geologists, and so forth? It’s the largest and best developed badlands on the Colorado Plateau, by far. A happenstance of geologic history made it so—a thin deposit of shale (Blue Gate member of the Mancos), recent uplift (geologically speaking), resistant sandstone on top of the shale (Emery member of the Mancos), and a large, new, active drainage system, with erosional stability followed by rapid downcutting.

Badlands like this are fragile. The very same rapid erosion that forms these dramatic steep hill, dendritic drainages, and striking sandstone-capped mesas also



*In a good spring the cracked clay is carpeted with flowers such as *Cleomella palmeriana* (upper left) and *Phacelia demissa*. Andy Godfrey photo.*

leads to relatively rapid loss of these features, finally cutting them down to a featureless plain. Natural erosion here is 10 times as fast as along the Fremont River west of Capitol Reef NP, and 100 times as fast as in Utah's West Desert.

So what does this mean to plant lovers? If you've ever seen these badlands in a good spring, you won't forget the awesome sight. 2005 was one of the great springs. Drifts of Palmer's cleomella, *Cleomella palmeriana* covered acres of basins. Natural bouquets of posies emerged amongst the polygonal cracks of the crust. In some places *Eriogonum inflatum*, Bottle Stopper, proliferated, or the large yellow flowers of that tough pioneer Common Sunflower, *Helianthus annuus*, made a contrasting statement to the blue-gray shale. Yellow-flowering clumps of Broom Snake-weed, *Gutierrezia sarothrae* and pink-flowered Fremont Buckwheat shrubs, *Eriogonum corymbosum*, bordered roads in the fall.

The most important plant items politically are the threatened *Pediocactus winkleri*, Winkler's Plains Cactus, and endangered *Sclerocactus wrightiae*, Wright's Fish Hook Cactus, which grow scattered throughout the area in favorable places.

Physical properties of the clay are more important than the chemical ones of abundant salts and high pH in making this a difficult environment for plants. The clay when wetted by rain swells up and seals quickly, preventing deeper penetration of moisture. Thus plants are successful in flatter areas where rain can stand longer, in drainages, and at the edges of roads. Cacti, with their shallow, wide-ranging roots and grab-water-quick-and-store-it strategy, are one of the better-adapted kinds of plants. The Mancos in its different locations supports more endemic plants than any other stratum on the Colorado Plateau.

On roads and trails in the Mancos, experienced drivers know that since water doesn't penetrate well, if

you wait a while after a rainstorm until the sun comes out and dries that thin wet layer, you may be able to continue on. Or maybe not. The BLM's Tim Finger got stuck 14 miles from the highway on the west branch of the Factory Butte Mine Road, and had to walk out.

OHVs always cause some degree of erosion. It's critical to know how much. But there are only two studies of OHV-caused erosion in the Factory Butte area, one with few replications and one preliminary.

Andrew Godfrey was a student of well-known geologist Charlie Hunt. With other students, Hunt brought Godfrey to the Henry Mountains and turned him loose to seek the dissertation subject of his choice. Godfrey chose the Mancos, and continued studying it for the rest of his life.

In 1980 Godfrey installed two sets of sediment traps (large soil pits) in the Factory Butte riding area and a precipitation monitor west of Factory Butte as part of a study for the Richfield Office of the BLM. In each set of pits one was fenced to keep riders away, and the other left unfenced; they were monitored twice a year. Godfrey's data haven't been published up to now or peer-reviewed. Recently Richard Grauch of the USGS in Colorado (the lead scientist of a study on the Mancos in the Gunnison area) began collaborating with Godfrey. Due to Godfrey's untimely demise last summer, Grauch is now writing up this work as best he can for a guidebook on the geology of central Utah to be published by the Utah Geological Association in 2007.

The best available summary of Godfrey's work on the effect of OHVs in the area is his expert witness testimony for the defense in a suit brought by the Southern Utah Wilderness Alliance (SUWA). Godfrey said that from this study and his other work on the Mancos, he considered that "the effects of off-highway

BLM Colorado Plateau hydrologist George Cruz, left, and the late Andy Godfrey, right, with precipitation station. Ben Everitt photo.



vehicles (“OHV”) use in the Factory Butte area are transitory in nature. . . these effects are short-lived”. He testified that he’d seen the surface crust reform in as little as a couple of days after rain, and that tracks should all disappear within two to five years (www.usa-all.com/docs/GOD-FREY_WITNESS_REPORT.PDF). The BLM now has photographic evidence, however, that tracks may remain at least six years and some longer.

The BLM asked retired USGS geologist John Dohrenwend, now an adjunct professor at the University of Arizona, to do a preliminary study of erosion in the Caineville Badlands (preliminary because the full study wasn’t funded). Dohrenwend explained that sediment traps aren’t a good way to study this. “Factors affecting water erosion include slope steepness, slope aspect, soil integrity, soil permeability, landscape position, vegetation cover, water speed and depth (to name just a few)...” Consequently this would require “construction of a large number of sediment traps in many diverse and widely distributed areas...” Not just two replications.

Dohrenwend used twelve 50-meter-long transects, eight on undisturbed hillslopes, and four along heavily disturbed hillslopes. He found that out that on these slopes the OHVs caused accelerated erosion four times the already fast rate in the area. As an effect, he predicted a big contribution of this erosion to be found in a runoff of salt into the Fremont River, drains easterly along the southern border of the area (www.factorybutte.org/documents/dohrenwend_Report.pdf). But river measurements don’t show this. Not all slopes are as heavily impacted, nor were shallower slopes measured in this preliminary study.

Soil scientist Lisa Bryant of the BLM State Office said that the methodology of Dohrenwend’s study is appropriate. “The data from both of these studies is good,” she says, “and they are pieces of the puzzle.” Bryant is describing local soils and formally describing the soil pits, which hadn’t been done.

The BLM is deciding what to do in the next field season to follow up on these two studies. Bryant points out that although there are several studies of the Mancos in other areas, notably the Gunnison area in Colorado and around Moab, the Mancos isn’t exactly the same everywhere.

Opponents of dirt bike riding call them ORVs, Off Road Vehicles, but riders and others call them OHVs, Off Highway Vehicles. More dirt riding is done on roads and trails than cross-country, but cross-country riding, especially when inappropriate, is more visible. Careless environmentalists tar all riders with the same brush. Hopefully that attitude is fading.

As with skiing or horseback riding, the skillful OHV rider takes great joy in the sport. But some riders seem to lose much of whatever outdoor ethic they had when the power of easy transportation to wild places is available. They don’t seem to be able to see the big picture, that the BLM’s mandate for multiple use means any use should be socially acceptable and sustainable. USA-ALL spokesmen, members, and



A heavily-used slope, transect 9 in Dohrenwend study. John Dohrenwend photo.

sympathizers tend to make incendiary statements not backed up by facts, and like the worst practices of environmentalists resort to regrettable name-calling and demonizing.

USA-ALL spokesmen said:

On the Endangered Species Act, that it: “would one day take away our public and even private land for the imagined benefit of insects and weeds.” “It should be clear that the ecomongers don’t give a hoot about the cacti here or anywhere else.”

On plants: “the Factory Butte lands are void of vegetation....”

On scenic values: “One would think that the environmentalists would happy [sic] to leave this wasted scrap of land for our use....”

On accelerated erosion: “...baseless claims of vehicle-induced erosion.”

Sympathizers are worse:

“Who, besides environmental weirdos, care [sic] about a stinking cactus? ...Kill the cactus, let people enjoy the open space!”

“Just more desert land in Utah that nobody will ever do anything with. It’s desert!! It is the most useless land around. If it was my child I would give it up for adoption; it’s good for nothin! Heaven forbid we put some tire tracks on this God Forsaken already ugly as can be land and actually enjoy it!” (KSL comment board on “BLM Restricts Off-road Travel on Factory Butte Badlands”, see www.ksl.com/?nid=148&sid=505232&comments=true for a variety of reactions).

Seems like Utah schools aren’t doing a very thorough job of environmental education.

The more sensationalist of the media like Salt Lake’s Channel 4 and the *Las Vegas Review Journal* all too often swallow this whole. Deadline-dominated, quick-and-dirty journalism at its worst, referring to those who worry about what’s happening at Factory Butte as “...extremists who would fence off all wild lands have long complained that those vehicles are noisy despoilers, cutting trails that encourage erosion—as though erosion isn’t what gave these lands their distinctive character in the first place (*Las Vegas Review Journal*).”



Tiny young Sclerocactus wrightiae. With the hazards this species faces, it's heartening to find a good stand of juveniles. D. Woodruff photo.

On the Naming of *Sclerocactus wrightiae*

I was privileged to work informally with Dr. Lyman Benson for several years. With so little known about U.S. cacti when he wrote his book (*The Cacti of the United States and Canada*), it was a tall order to cover all of North America. Consequently he appreciated the help of people who were knowledgeable about their local cacti. I remarked to him once that I thought plants should be named after some characteristic of their own. When he named *S. wrightiae* after me, he either forgot that or did it anyway. Naming a species after the person who reported it was his common practice, his way of thanking those who helped him. Dr. Benson was a kind, quiet, generous man, but very determined. He did things his way, but was quick to agree when he found that someone else knew more about a species than he did. The name Wright is from my first marriage, from when I contacted Dr. Benson in 1960, and when I gave him the plants in 1961.

He wrote "San Rafael Ridge" meaning the area of San Rafael Reef as the type locality, meaning to be vague to discourage collectors. As I recall, however, within a year collectors or dealers had it, always avid for a new or rare species. Ironically, the type locality is at the edge of its range, and in my long-term experience it's easier to find it elsewhere. Back then not nearly so many people went to the back-country of the Colorado Plateau, but even now in some of its range you would have to make a major walk out if your vehicle quit.

- Dorde Wright Woodruff

Or suggesting that *S. wrightiae*, which was first reported in the early 1960s and seen on the Mancos in this area not too long after that, was somehow "only recently discovered around Factory Butte" just in time to force an appeal for closure (Paul Foy, in an A.P. story used in newspapers around the world).

Or using inflammatory, misleading headlines: "Off-roading banned in Utah area" But the closure was a restriction not a total ban. This same headline appeared in the *Houston Chronicle*; *Guardian Unlimited*, UK; CBS News, *LA Times*; *Leading The Charge*, Australia; etc.

The riders are very good about the "Leave no Trace" ethic other than the tracks. On a recent visit to Swingarm City, the principal riding area and the one that remains open, also popular for camping, there was no trace of litter whatsoever.

SUWA and the Friends of Factory Butte finally did find a way to convince the BLM to make a serious move, after failed efforts by both factions. On April 1st of last year, they submitted a 40-page petition to Secretary of the Interior Gale Norton for emergency closure of the Factory Butte Area. It cited many reasons: accelerated erosion, possible runoff of toxic selenium and other air and water pollution, riders on private land, visual effect on travelers and tourism, needs of photographers, and damage to vegetation including the listed species, all carefully documented. It cited cautions by BLM personnel on excessive use by OHVs in previous documents, and legal reasons for action (see www.suwa.org/library/001_FactoryButteClosurePetition_FINAL.pdf).

The BLM asked its Resource Advisory Council for a recommendation, forming a subcommittee. They met over a period of months and had three field trips, one each with geologists Andy Godfrey and John Dohrenwend, and a longer one to cover the whole area. In the end, they couldn't agree on a recommendation, though they did submit viewpoints. USA-ALL pulled back from any compromise.

The BLM has been surveying the listed species for years, but they did fieldwork this time focused on the Factory Butte area. Damage to *S. wrightiae* from the OHVs was documented, in addition to the usual damage the species suffers from being smashed or uprooted by cows or horses, mining or other industrial activity, road-building, beetle borers and other herbivory, seed-eating by insects or other animals, theft, and drought. With no particular means of long-distance dispersal of seeds, sometimes you wonder how the species survives at all. I started looking at *Sclerocactus* in 1960, and my early impression was that populations were more numerous and widespread before white settlement; recent monitoring only confirms that conclusion.

In reply to the petition, on April 7, 2006, Richfield area manager Cornell Christensen replied that although the other impacts weren't proven sufficiently adverse over the whole area to justify closure, the protection legally required for listed plants did justify a closure, to be in effect until the new RMP takes effect.

An 11-page document detailed the BLM's response to the items of the petition: www.suwa.org/library/BlmResponse_FactoryButtePetition.pdf. Of all the petition items, they chose to act on behalf of the listed cacti; the law is clear.

After review by Washington, the emergency closure order was placed in the Federal Register on September 20 (www.ut.blm.gov/factorybutte/federal_register.htm). It restricts the riders to a 2602-acre play area that includes most of the smaller one suggested for voluntary use in the 1982 MFP, and designated roads and trails. The BLM urges riders to contact it with suggestions, including routes for additional trails. They will keep the riding away from the visual corridor of highway 24, and ban it between the highway and the river. They found funds for infrastructure such as fencing.

Despite USA-ALL's claims that Factory Butte was the last open riding area left and that riders have no place left to go, Utah State Parks' website www.state.parks.utah.gov/ohv/where.htm lists 28 Open Areas and Trail Systems; the main Paiute ATV Trail alone is 275 miles long, with over 1000 miles of marked side trails and more than 1500 miles of side forest roads and trails. From all over the U. S. and even from abroad, 650 ATV riders and some motorcyclists converge on Richfield every fall for the annual Rocky Mountain ATV Jamboree, with a choice of 69 different rides during the event.

Naturally, riders don't like to face being barred from places they enjoy. But as with all of us, more

users of the outdoors means the pie is split into smaller pieces. Dirt roads we used to drive on that were decent are now terribly washboarded due to increased visitation that maintenance doesn't keep up with. Favorite camping places are now illegal, wood gathering is prohibited, or open fires banned even if you bring your own wood. Places you once owned when you went there, together with the plants and the animals, are no longer so unused.

The Richfield RMP is expected in December, though it possibly may be delayed even more. Earlier management plans and their fallout showed the agency it had to be careful of what it promised to do, such as monitoring. It's totally dependent on Congress to appropriate funds. No funds, no monitoring.

Also the plan is being checked in Washington to make sure it conforms to U.S. District Judge Dale Judge Kimball's decision this summer that the agency, under the current administration's rush to drill, had not been conforming to law in regards to oil and gas leasing (see www.suwa.org/library/080306TribArticle_O&GCourtWin.pdf).

It's important to read the draft RMP and make comments; the riders certainly will. You can ask Richfield Assistant Field Manager and planner Frank Erickson (425-896-1532; Frank_Erickson@blm.gov) to mail you a notice, or just review it online. The Preferred Alternative for OHV use at Factory Butte is expected to be similar to what is specified in the Emergency Closure; the BLM would be grateful for support of what they think is the best solution.

Factory Butte with fall-blooming shrubs. D. Woodruff photo.



Utah Plant Families: The Mistletoes (Viscaceae)

By Walter Fertig

A person's opinion about mistletoes varies depending on their holiday spirit, hobbies, or occupation. Yuletide revelers appreciate the mistletoe for its role in promoting holiday cheer (and the opportunity for socially acceptable public kissing). Birders recognize the value of mistletoe as an important winter food source for overwintering songbirds. Foresters, however, take a more dismal view towards mistletoes because of the reduced growth and vigor of commercially valuable trees infected with these plants.

Mistletoes are parasitic or partially parasitic (hemiparasitic) herbaceous plants that grow from the stems of other woody species. In our area, mistletoe hosts are mostly conifers (especially pines and junipers), but across their range these plants can also infect oaks, acacia, mesquite, eucalyptus, and even columnar cacti. The mistletoe habit has been adopted by members of four closely related plant families found throughout the world, but best developed in the tropics. The families differ in floral morphology and fruit and inflorescence characters. Only one family, the Viscaceae, occurs north of Mexico (although 7 species of the related Loranthaceae occur in Puerto Rico).

Like many other parasites, mistletoes have a greatly simplified body plan. Most of a mistletoe is found below the bark of its host. Specialized, fungus-like stems called cortical haustoria grow just beneath the bark in the food-transporting phloem tissue of the host. Root-like stems called sinkers diverge at right angles from the haustorium into the outer layers of sapwood or xylem. The haustoria and sinkers help anchor the mistletoe into the stem and allow it to tap into its host's food and water pipelines. Depending on the species, bushy aerial stems emerge through the bark near the site of the original infection or sprout periodically along the length of the host branch as it elongates.

In our species, leaves are essentially absent or reduced to small, opposite scales. Outside of Utah, mistletoes often have well-developed green leaves that are capable of photosynthesis. At least 35 species in Australia even produce leaves that mimic the size and shape of their host plants, usually eucalyptus. Non-photosynthetic and fully parasitic mistletoes usually have yellow, brown, or orangish stems.

In the Viscaceae, flowers are small and unisexual, and lack showy petals to attract visually-oriented bird or insect pollinators (as found in tropical mistletoes of the Loranthaceae family). Our Utah mistletoes have sessile or short-stalked yellowish to green fleshy flowers borne in a spike-like, scaly inflorescence at the tip of aerial stems. The flowers have a perianth of 3 or 4 tepals which are all similar in shape, size, and texture, unlike the distinct sepals and petals typical of most flowers. Staminate flowers have 3 or 4 pollen-

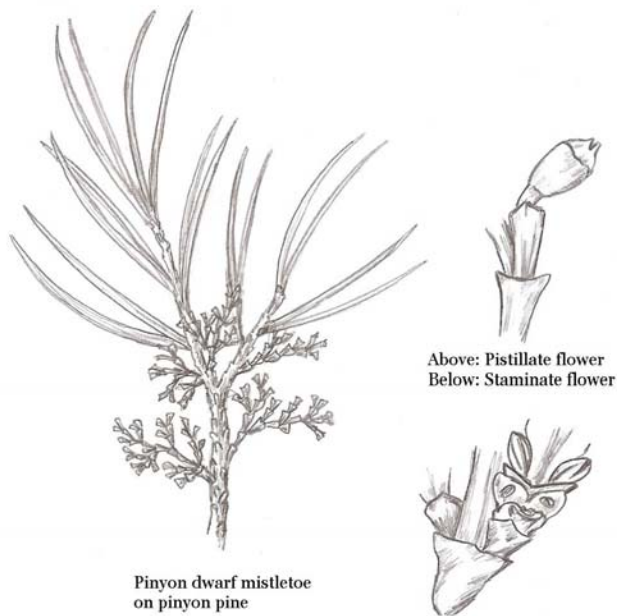


Above: *Juniper mistletoe* (*Phoradendron juniperinum*) differs from most species in its genus by lacking fully developed leaves. This is the most abundant mistletoe species in Utah, occurring widely across the Colorado Plateau and Wasatch Front and primarily parasitizing Utah juniper (*Juniperus osteosperma*). Photo by W. Fertig.

producing stamens, matching the number of tepals. Fruit-producing pistillate flowers have 2 or 3 tooth-like tepals and are either paired or whorled at each branch of the inflorescence.

Two of the eight recognized genera of Viscaceae occur in Utah. The largest genus worldwide is *Phoradendron* (literally translated from the Greek as 'tree thief') with about 200 species, of which only two occur in the state. Juniper mistletoe (*P. juniperinum*) is the most widely distributed of the state's mistletoes occurring commonly across the Colorado Plateau and the Wasatch Front (but largely absent from the Uinta Basin). This species primarily parasitizes Utah juniper (*Juniperus osteosperma*), although it may occasionally be found on Common juniper (*J. communis*). The related Acacia mistletoe (*P. californicum*) is much rarer in Utah and found only in the Beaver Dam Mountains west of St. George. Acacia mistletoe is unique among our Utah species in parasitizing woody angiosperms, especially Catclaw acacia (*Acacia greggii*), mesquite (*Prosopis* sp.), and rarely creosote bush (*Larrea tridentata*) or Fremont cottonwood (*Populus fremontii*). Both of our species are leafless, but other *Phoradendron* species in North America have broad green leaves and are at least partially photosynthetic.

Six Utah species belong to the genus *Arceuthobium* or the dwarf mistletoes. These taxa occur exclusively on conifers; each species typically specializes on one or two specific hosts. With the exception of *A. americanum* and *A. douglasii*, most of the other dwarf mistletoe species are remarkably similar in gross appearance and were, at one time, considered phases of a



Above: *Pinyon dwarf mistletoe* (*Arceuthobium divaricatum*) is the most common of the dwarf mistletoes in Utah, ranging widely across the state wherever its primary host, *Two-needle pinyon* (*Pinus edulis*) grows. Illustration by W. Fertig.

single species, *A. campylopodum* (found to the west of Utah). Identification of dwarf mistletoes is aided by their host specificity, though in rare circumstances one species may occur on the typical host of another. In general, though, our major conifer species each have their own particular dwarf mistletoe: *A. abietinum* on White fir, *A. americanum* on Lodgepole pine, *A. cyanocarpum* on Limber and Bristlecone pines, *A. divaricatum* on Two-needle and Singleleaf pinyon, *A. douglasii* on Douglas-fir, and *A. vaginatum* on Ponderosa pine or Engelmann spruce. With the exception of Pinyon dwarf mistletoe (*A. divaricatum*), most of the *Arceuthobium* species in Utah have fairly restricted ranges or are otherwise infrequently collected, perhaps because field botanists are looking for plants on the ground rather than perched on the branches of trees and shrubs.

Our two genera of mistletoes differ primarily in fruit structure and their mode of seed dispersal. Species of *Phoradendron* produce white, pinkish, or red berry-like fruits that resemble tiny beach balls and which are readily consumed by birds. Within each berry is one or two extremely sticky seeds. The seeds are either excreted on a branch (with a dollop of organic fertilizer) or smeared on a stem by a bird's beak

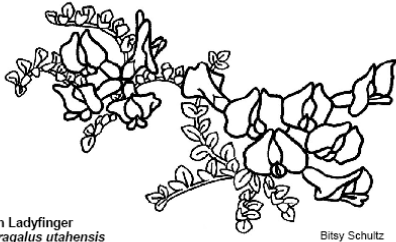
as it tries to dislodge the seed from the tasty fruit pulp. (The word 'mistletoe' comes from an Anglo-Saxon term for 'dung twig'.) *Arceuthobium* taxa have distinctly bicolored ovoid berries that explosively discharge their single seed 15-50 feet (at a speed of 60 miles per hour). Recent studies by Canadian botanist Cynthia Ross have shown that dwarf mistletoes slowly build up water pressure in their fruits for over a year until the pressure becomes so great that the fruit wall bursts. As with *Phoradendron*, these seeds are viscous (it is the "visc"-aceae after all) and stick to any surface they contact.

Masses of mistletoe stems are sometimes called witches'-brooms due to their fanciful resemblance to the flying vehicle of choice for practitioners of witchcraft. These structures can be important as nesting habitat for songbirds, raptors, and squirrels and can provide forage for deer and elk. However, not all witches'-brooms result from mistletoe infection. Rust fungi and amoeba-like microbes called phytoplasmas can infect the phloem of a tree and cause broom-like growths similar to mistletoe.

Since ancient times, humans have been fascinated by the peculiar habit of mistletoe arising from the stems of other plant species. In Europe, the traditional Christmas mistletoe *Viscum album* was thought to have been sent to Earth by a special envoy of the gods, the Mistletoe thrush (a winter migrant from Africa that feeds extensively on mistletoe berries). Many cultures across the globe thought mistletoes possessed spiritual power and medicinal value, especially for promoting fertility. Mistletoes have often been considered omens of good fortune and were frequently hung indoors during winter for some color and to foster positive spirits. Over time, this tradition may have morphed into the practice of hanging a sprig of mistletoe over the door at Christmas time. According to Norwegian tradition, a man should remove one berry for each kiss stolen from a woman until all the berries are gone (and the kissing must cease!)

Very few foresters are likely to feel particularly romantic about mistletoes. Dwarf mistletoe infections are especially deleterious to western conifer species used for commercial timber harvest. Each year an estimated 3.3 billion board feet of timber is lost to mistletoe (for perspective, total timber harvests in 1996 were 15.5 billion board feet. 13,600 board feet of lumber goes into a typical 2000 square foot home). Mistletoe infestation reduces the vigor of the host tree, damages wood, increases susceptibility to drought stress, attack from pine beetles (genus *Ips*) and fire. Fire suppression and high-grading (harvesting large, healthy trees but leaving infested ones) over the past century has probably increased the abundance of dwarf mistletoe in many western forests.

Complete control of mistletoe is unfeasible and undesirable in our western forests, given the value of these plants to wildlife. Besides, without mistletoe, how would shy people work up the courage for a holiday kiss?



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